9-14-2009

BESS 9/14/09

Department of Biosystems Engineering and Soil Sciences

BESS NEWS
BIOSYSTEMS * ENGINEERING * SOIL SCIENCE

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September 14, 2009
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http://bioengr.ag.utk.edu

Click link to read

TOP STORIES

STUDENT PROFILE

JAMES (JAY) BEVINGTON is a junior in Biosystems Engineering, and is currently working as an assistant in Dr. Paul Ayers' lab.

When asked how he found our department, and what made him choose Biosystems Engineering (BsE) as his major, he replied that the question should really be, "What made you choose UT?" Most of Jay's friends from high school went to LSU, as it is near his hometown of Mandeville, LA. His family, however, has made a tradition of attending UT, and they encouraged him to continue it. At the last minute, Jay applied to UT, and became the 24th in his family to become a Volunteer. He is very glad to have made this decision.

Jay began his studies in Aerospace Engineering, and met Dr. Ayers in an Engineering Fundamentals class. He then took Design Apprenticeship with Dr. Daniel Yoder, and decided that he wanted to change to BsE.

I asked Jay what helped him to decide on BsE as his major. Jay responded that "Biosystems Engineering & Soil Science is smaller department, with approachable faculty, staff, and students. The support around here is amazing."

He was also impressed by the many learning opportunities that BESS provides, such as being able to work as a student assistant in a research lab, the Quarter Scale Tractor project, and the variety of available classes. He said that the Quarter Scale Tractor project is "cool", and was more educational than any class last spring. Working on the tractor stretched his abilities the most, and he would do that much work again, even though no class credit was earned. (*continued* ***here***)

From the Department Head:

The new academic year is underway (along with a new football season and head coach), which has seen the renewed energy level that always accompanies the return of students and the resumption of classroom teaching. We celebrated the start of the new academic year with our annual Welcome Back Barbeque on August 27th. Although rain forced the celebration to relocate from the UT Trial Gardens to Holllingsworth Auditorium, the group enjoyed tasty pork barbeque prepared by Chef Buschermohle, and entertainment by members of the UT Bluegrass Club, including our own Stacey Worley on guitar, led by "Doc" Ammons on stand-up bass.

The start of the academic year also marks the first anniversary of this newsletter, which we have been publishing roughly twice a month, and for which we always welcome your submissions.

We recently learned that CASNR obtained stimulus money which allowed us to hire a new full time lecturer to support our teaching program for the next two years. Andrew Sherfy, a Ph.D. student in Soil Science, will be responsible for an additional section of Dr. Neal Eash's popular ESS 120 - Soils and Civilizations course, which is a university wide general education credit. The addition of Andrew allows us to accommodate an additional 70 students which were unable to register for course without this hire. We welcome Andrew to the teaching faculty, where he will be supporting a range of courses in the Soil Science curriculum, and will enable us to offer a new section of Dr. Joanne Logan's general education ESS 220 - Waters and Civilizations in the spring term.

We are all excited to start the new academic year, and look forward to seeing our friends and alumni at Ag Day on September 26, prior to the football game with Ohio University. -- *Eric*

MORE NEWS – CLICK BELOW

Please submit items to Darla O'Neill doneill1@utk.edu BESS NEWS is issued on 1st & 3rd Mondays of each month. Archived issues post to departmental website.

THE UNIVERSITY of TENNESSEE INSTITUTE of AGRICULTURE

BE THE BESS YOU CAN BE

BESS NEWS

Return to Front page

We Congratulate Cecil Woody…

On August 14, 2009, Cecil Woody received his Bachelor's degree in Psychology, and is now enrolled in UT's Masters of Rehabilitation Counseling Program. While Cecil is not officially a BESS employee or student, he is nevertheless an integral part of our department, for he helps keep it running smoothly. Cecil is a Maintenance Specialist II with Preventative Maintenance, and is responsible for the BESS Office and Labs buildings. We are proud of his accomplishments, and are pleased to claim him as part of BESS.

It has taken Cecil some time to get his Bachelors Degree. Cecil originally attended Walters State Community College studying Sports Medicine, but he also wanted to understand clinical depression and other facets of the human psyche. He planned on a double major in Physical Education and Psychology, but he was unable to finish school at that time. He began working at Carson Newman as a student trainer for football, basketball, and soccer.

He attended UT Evening School in the 1990s, but then began working at a nursing home as a CNA ambulance attendant, then several years with wound care. During all that time he never gave up on his education.

Cecil's mother has been his inspiration. Though she could not read, Mrs. Woody firmly believed that the only way out of poverty is through education. In 2004 she became very ill, and Cecil spent most of his time taking care of her. After she passed away in 2006, Cecil again focused on his desire to finish college. He came to work at UT, and began classes as a part time student in Fall 2007. He focused on the Psychology degree, finishing that in 2 years.

Cecil's family is proud of his accomplishments, as he is the first of his family to graduate from college. He encourages his nieces and nephews to do well in school, and to continue on to college as well. Cecil also believes that non-traditional students like himself are a benefit to the average classroom. Having more life experience helps a student better appreciate the opportunity to learn, and can make a person more willing to speak up in class and ask questions. Also, non-traditional students view the educational experience from a different perspective.

When Cecil is finished with his degrees, he would like to work in the Psychology field, either as a clinical psychologist or as a researcher. We are proud to have him as part of the BESS family, are thankful for his work with us while he is here, and wish him all the best in whatever his future holds. Congratulations, Cecil! *---Margaret Taylor*

Student Profile (*continued from front page*):

Jay understands that Biosystems Engineering is not yet a term familiar to all employers, and is prepared to persuade others to see him and other BsE students as good prospective employees. BsE is the broadest of the engineering disciplines, and focuses all of those skills onto problems related to biological systems, whether that be biofuel production, off-road equipment design, erosion and sediment control on construction sites, sustainable production of food and fiber, pharmaceutical production, etc. By majoring in BsE, Jay will have a very broad-based education. He sees the program as an excellent choice for engineering students who want jobs in the new bio-based economy, as well as for those who want more traditional engineering jobs.

Jay spent several summers working on his grandparents' farm, and enjoys being outside. He isn't sure what he will do when he graduates, but eventually, Jay would like to be self-employed and perhaps try his hand at inventing.

Jay would like to say how much he appreciates everyone in department. He knows he can ask anyone here for help, whether it is with understanding equations, borrowing keys, or even just finding a couple of spare AA batteries.
---Margaret Taylor

(BESS NEWS continued next page)

BESS NEWS

Return to Front Page

The Welcome Back Social – **definitely** the place to be!

BESS NEWS

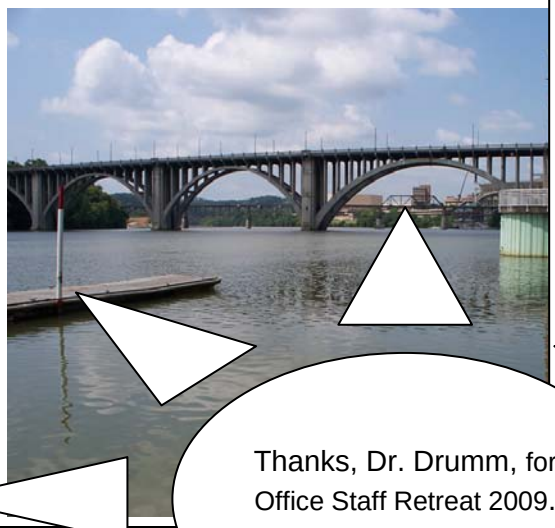
Return to Front page

Just sit right back and you'll hear a tale,
A tale of a fateful trip
That started from this mountain port
Aboard this tiny ship.

The mate was a mighty sailing man,
So chipper, brave and sure.
Four passengers set sail that day
For a two hour tour, a two hour tour.

The weather it was great enough,
The tiny ship was fast,
If not for the hunger of the fearless group
All day the trip could last, all day the trip could last.

The ship set ground that day
at Calhoun's on the River
With Dr. Drumm,
Darla O'Neill, too,
Lois Stinnett, Sandy Marine
and Lesia Rucker.
Plus Margaret Taylor and Lori Gibson,
Here on Volunteer Isle!



Thanks, Dr. Drumm, for Office Staff Retreat 2009.

It was great!

Photo credits: Margaret Taylor, photographer; Lori Gibson, photographer's assistant

Funding Opportunities

Return to Front Page

Tobacco Education and Research Council, Inc. (TERC),

There is available approximately $300,000 in funds to support tobacco research, education and extension projects that provide support and benefit to the largest number of Flue-cured and Burley tobacco growers in the following areas: improved leaf quality; improved competitiveness in a global market; reduction of tobacco specific nitrosamines and/or suspected harmful substances in tobacco leaf.

Proposals from faculty with tobacco responsibilities at all seven land-grant universities with tobacco research programs will be accepted. Please forward this information to Department Heads and other faculty and staff with tobacco responsibilities as you deem appropriate.

The North Carolina Tobacco Foundation, Inc. (NCTF) at NC State University has agreed to assist with the TERC application and proposal process. If your organization is interested in submitting an application, please use the attached guidelines and application or visit http://www.cals.ncsu.edu/advancement/terc.htm.

Applications are in MS Word format and can be typed on, then printed for copying and submission. **Please note that applications are due no later than 5:00 p.m. on Monday, October 26, 2009** and that funds will be available beginning on January 1, 2010. Please contact Kathy Kennel, Executive Director, NCTF, at 919-515-9262 if you have any questions.

Transportation Research Board Request for Proposals

NCHRP 25-32 [RFP]
Measuring and Removing Dissolved Metals from Storm Water in Highly Urbanized Areas
Posted Date: 8/25/2009
Funds: $300,000; Contract Time: 18 months; Staff Responsibility: Christopher J. Hedges
Phone: 703/383-0522, Email: chedges@nas.edu
RFP Close Date: 10/15/2009
Fiscal Year: 2010
This is an NCHRP project - I am familiar with these and the agency and can provide background if anyone is interested. --Eric
http://144.171.11.40/cmsfeed/TRBNetProjectDisplay.asp?ProjectID=2737

NSF 09-598: Research Experiences for Undergraduates (REU)

The National Science Foundation is soliciting proposals for the Research Experiences for Undergraduates (REU) program. The program supports active research participation by undergraduate students in any of the areas of research funded by the National Science Foundation. REU projects involve students in meaningful ways in ongoing research programs or in research projects specifically designed for the REU program.
The REU program features two mechanisms for support of student research: **(1) *REU Sites*** are based on independent proposals to initiate and conduct projects that engage a number of students in research. REU Sites may be based in a single discipline or academic department, or on interdisciplinary or multi-department research opportunities with a coherent intellectual theme. Proposals with an international dimension are welcome. A partnership with the Department of Defense supports REU Sites in DoD-relevant research areas. **(2) *REU Supplements*** may be requested for ongoing NSF-funded research projects or may be included as a component of proposals for new or renewal NSF grants or cooperative agreements.
Undergraduate student participants in either Sites or Supplements must be citizens or permanent residents of the United States or its possessions.
It is anticipated that $67.7M will be available to fund 1,800 to 1,850 (170 Site and 1,650 Supplement) **awards.** Cost sharing **is not** required. Complete award information is found in the full solicitation.
Deadline for REU-Site Proposal to OR-Sponsored Programs: 10/15/2009
http://www.nsf.gov/funding/pgm_summ.jsp?pims_id=5517&from=fund

STUDENT NEWS

Return to Front Page

Undergraduate Students – Key Dates

Last Day to Drop with a “W” - 1st Session Courses ..... September 17, 2009
Last Day to Drop with “WP/WF” grade - 1st Session Courses ..... September 25, 2009
First Session Classes End . ..... October 7, 2009
Second Session Classes Begins ..... October 8, 2009
Last Day to Add, Change Grading Options or Drop without “W” – 2nd Session Courses ..... October 12, 2009
Fall Break (No Classes) ..... October 15-16, 2009
Last Day to Drop with a “W” - Full Term Courses ..... October 20, 2009
Last Day to Drop with “W” - 2nd Session Courses ..... November 6, 2009
Last Day to Drop with “WP/WF” grade - Full Term Courses ..... .November 10, 2009
Last Day to Drop with “WP/WF” grade - 2nd Session Courses ..... .November 16, 2009
Thanksgiving Holidays (No Classes) ..... .November 26-27, 2009
Total Withdrawal from the University Deadline ..... December 1, 2009
Classes End (Full and Second Session)..... December 1, 2009
Summer 2010 Graduation Application Deadline ..... December 1, 2009
Study Period ..... December 2, 5, 6, 2009
Exam Period ..... December 3, 4, 7, 8, 9, 10, 2009
Commencement Rehearsal (Thompson Boling Assembly Center & Arena) ..... December 11, 2009
Commencement (Thompson Boling Assembly Center & Arena) ..... December 13, 2009

Graduate Students - Key Dates

Last day to Change Credit or Grading Options with signatures - 1st Session Courses ..... September 8, 2009
Graduation Fee Payment Deadline ..... September 21, 2009
Last Day to Drop with a "W" - 1st Session Courses ..... September 25, 2009
Last Day to Change credit or Grading Options with signatures - Full Session Courses ..... September 29, 2009
First Session Classes End ..... October 7, 2009
Second Session Classes Begins ..... October 8, 2009
Last day to Add, Change Grading Option and Drop without a "W" - 2nd Session Courses ..... October 12, 2009
Last Day to Meet with Consultant for Thesis/Dissertation Preliminary Review ..... October 14, 2009
Fall Break (No Classes) ..... October 15-16, 2009
Tentative Deadline to Purchase Cap and Gown ..... October 16, 2009
Last Day to Schedule Defense of Thesis in Department ..... October 23, 2009
Last Day to Schedule Final Comprehensive Exam (Non-thesis Students) in Department ..... October 23, 2009
Last Day to Change Credit or Grading Options with signatures- 2nd Session Courses ..... October 26, 2009
Last Day to Register to Attend Graduate Hooding . ..... October 30, 2009
Last Day to Schedule Defense of Dissertation ..... October 30, 2009
Last Day to Defend Thesis/Dissertation ..... November 6, 2009
Last Day to Take Final Comprehensive Exam (Non-thesis Students) ..... November 6, 2009
Last day to drop with a “W” - Full Session Courses ..... November 10, 2009
Last Day to Drop with a "W" - 2nd Session Courses ..... November 16, 2009
Thesis/Dissertation Submission Deadline ..... November 20, 2009
Report of thesis/dissertation defense or final comprehensive exam (Pass/Fail Form) ..... November 20, 2009
Thanksgiving Holidays (No Classes) ..... November 26-27, 2009
Total Withdrawal from the University Deadline ..... December 1, 2009
All Incompletes Must Be Removed for Graduation ..... December 1, 2009
Classes End ..... December 1, 2009
Study Period 2, 5, 6, 2009
Exam Period ..... December 3, 4, 7, 8, 9, 10, 2009
Commencement Rehearsal (Thompson Boling Assembly Center & Arena) ..... December 11, 2009
Graduate Hooding Ceremony (Thompson Boling Assembly Center & Arena) ..... December 11, 2009
Commencement (Thompson Boling Assembly Center & Arena) ..... December 13, 2009

(MORE NEWS NEXT PAGE)

STUDENT NEWS

Return to Front Page

American Council of Engineering Companies Scholarship Information for 2010

The American Council of Engineering Companies (ACEC) of Tennessee and our national organization are offering state and national scholarships again this year. Thanks for your assistance in getting this information to engineering students. This message, along with a link to the application is at: http://www.acectn.org/Scholar.htm

We were delighted when Ipshita Thomas, a UT-Chattanooga graduate engineering student, won the first place scholarship from ACEC for $10,000 this year (in addition to the state scholarship)! Several years ago a UT-K student was the runner-up for the national scholarship.

ACEC of Tennessee will be screening the applications for the state and national scholarships for 2010.

To qualify, a student must be a U.S. citizen pursuing a Bachelor's, Master's, or Doctor of Philosophy degree in an engineering or land surveying program in Tennessee in a department that has at least one ABET-accredited program. Students must be entering their junior, senior, fifth, or graduate year in the fall of 2010 to qualify. A student's interest and commitment to the business and management of the profession are factors that will be considered and students are encouraged to reflect that throughout the application. Students are also encouraged to be as complete as possible while filling out the application.

The deadline for submitting an application to ACEC of Tennessee is January 29, 2010. Incomplete applications will not be considered.

The national scholarship winners will be announced by ACEC in late summer 2010. ACEC of Tennessee will announce its scholarship winner in March 2010.

After completing the application, please return it to:

ACEC of Tennessee
Tennessee Engineering Center
800 Fort Negley Boulevard
Nashville, TN 37203

References and official college transcripts must be mailed to the same address. Electronic submissions may be sent to ctoler@tnec.org

Candy Toler, Executive Director
TN Society of Professional Engineers & American Council of Engineering Companies of TN
TN Engineering Center
800 Fort Negley Boulevard
Nashville, TN 37203
www.tnspe.org and www.acectn.org

University of Tennessee Educational Advancement Program Fall 2009

TUTORS NEEDED NOW FOR:
Math (100 level), Statistics 201, EEB 240, BCMB 230, AFST 235, Chemistry (100 level) Biology (100 level)
Nutrition 100, (other subject areas are needed on a case by case basis!)
“Flexible Hours”
Pay Rate = $7.50 per hr. for Undergraduate Tutors
$ 8.50 per hr. for Graduate Tutors
(Completion of an EAP Tutor Application is “Required”)
CONTACT: Celeste Brooks, TUTOR COORDINATOR, brooksac@utk.edu,

Fall 2009 EPA Science To Achieve Results (STAR) Fellowships For Graduate Environmental Study

URL: http://epa.gov/ncer/rfa/2009/2009_star_gradfellow.html
Open Date: 08/19/2009 - Close Date: 10/22/2009
Summary: The U.S. Environmental Protection Agency (EPA), as part of its Science to Achieve Results (STAR) program, is offering Graduate Fellowships for master’s and doctoral level students in environmental fields of study. The deadline is October 22, 2009 at 4:00 PM for receipt of paper applications, and October 22, 2009 at 11:59:59 PM ET for submittal of electronic applications to Grants.gov. Subject to availability of funding, the Agency plans to award approximately 120 new fellowships by June 30, 2010. Master's level students
may receive support for a maximum of two years. Doctoral students may be supported for a maximum of three years, usable over a period of four years. The fellowship program provides up to $37,000 per year of support per fellowship. (865)974-7900.

CASNR NEWS

Return to Front Page

Important Message From the Tennessee Teaching and Learning Center:

The Tennessee Teaching and Learning Center (TENN TLC) is initiating a set of FACULTY INQUIRY GROUPS (FIGS) for the fall semester that furthers the discussion and application of specific teaching methods. Faculty will have the opportunity to engage in discussion and training with other faculty across disciplines. Each FIG will range from 8 – 12 people and will have a faculty
leader, someone who is an expert on the topic. The three FIGS for this semester are described below with instructions that follow. Service Learning FIG – Service learning is not volunteerism. It is a means to engage students in a significant learning activity through work in the community. This FIG will explore the use of service learning in courses either as a part of a course or the focal point of the course. Faculty will meet with both individuals who have successfully initiated service learning in their courses, and community leaders to better understand how a course, or portion of a course, can engage community needs. This FIG will be lead by Dr. Bob Kronick, Professor of Educational Psychology and Counseling, and one of UT's most recognized leaders and advocates for active student engagement through service learning. Reflective Practice FIG – Reflective practice (RP) refers to a process of informally and formally inquiring into our daily practices with the intent to improve it. This FIG will work in a collaborative fashion reflecting upon faculty experiences, assumptions, beliefs and values as a means of improving student learning and teaching practices within their courses. Dr. John Peters from the Adult Education and Collaborative Learning Program at UT will lead this group. Dr. Peters is one of the recognized experts in RP and has taught the graduate course for many years. Both former students and community practitioners have noted that the course changed their lives, their way of thinking and relating to others. Acting Principles Applied to Teaching FIG – There is a set of basic acting principles that all actors know but most teachers do not. These principles can make a significant difference in how faculty members approach their classroom teaching, engage their students, and create resultant positive student response. Jed Diamond, Director of the Acting Program in the Theater Department at UT will lead this FIG. Jed will spend significant time coaching each faculty member in the FIG. The coaching he provides can be applied immediately back into the classroom. Each FIG will establish a meeting time every couple of weeks or as the group determines. These groups will be kept small so if you are interested in one of more, please email me your ranked preference. First come, first served. Please forward your preferences to the Tennessee Teaching and Learning Center email address (tenntlc@utk.edu) or to David Schumann (dschuman@utk.edu) and note your ranked preference to participate below.

Service Learning FIG _____

Reflective Practice FIG _____

Acting Principles FIG _____

Thank you,

David W. Schumann, Ph.D.
Director
Tennessee Teaching and Learning Center
Aconda Court Room 103
1534 Cumberland Avenue
University of Tennessee
Knoxville, TN 37996
(O)865.974.3932 (Fax)865.974.3935

AgResearch NEWS

Return to Front Page

NC_TEMP1183. "Mycotoxins: Biosecurity, Food Safety and Biofuels Byproducts

NIMSS: Request participation in proposed project/activity
Your institution/agency/entity is invited to participate in a new or revised project/activity, NC_TEMP1183. The following are directions for viewing the project proposal entitled "Mycotoxins: Biosecurity, Food Safety and Biofuels Byproducts (NC129, NC1025)" and for creating in Appendix E to authorize participation by your scientist(s) /specialist(s) in this proposed activity.
Please submit the Appendix E no later than 12/01/2009
****

To View the Proposal:
1. Go to the National Information Management Support System at http://nimss.umd.edu
2. Insert your login and password. (If you don't have a login ID, you'll need to register, also at the URL above. If you forgot, please use the "Track ID" function on the login page. Please do not re-register.)
3. In theTop Menu, Select Project then Select View Projects
4. Enter the project number, NC_TEMP1183
****

To Create and Submit an Appendix E for a Proposed Project:
1. Go to the National Information Management Support System at http://nimss.umd.edu
2. Insert your login and password. (If you don't have a login, you'll need to register, also at the above URL.)
3. In theTop Menu, Select Participants then Select Draft/Edit
4. On the Left side Menu, Select "Draft New"
5. Select the project number NC_TEMP1183
6. Fill out the form.
7. Click on Submit.

Thank you. Please contact the Administrative Advisor(Beverly Durgan) if you have questions about the proposed project.
Contact your System Administrator (in your Executive Director's office) if you have questions about the use of NIMSS.

National Science Foundation Request for Reviewers for ARRA Activity

The National Science Foundation is requesting merit review expertise in the Academic Research Infrastructure – Recover and Reinvestment (ARI-R2) program (http://www.nsf.gov/pubs/2009/nsf09562/nsf09562.pdf). This program is supported by the American Recovery and Reinvestment Act of 2009 (ARRA).
ARI-R² is designed to support 21st century research and research training infrastructure in our Nation's academic institutions and non-profit research organizations, such as research museums, research laboratories, and research consortia. ARI-R² will revitalize existing research facilities so that they provide next-generation research infrastructure and facilitate the integration of researchers with shared resources such as remote instruments and research platforms, data repositories, and national computing facilities. Research facilities are shared space where sponsored and/or unsponsored research activities and research training take place. They may be "bricks and mortar," mobile or virtual research space.
The National Science Foundation is in need of expertise in a wide range of fields to evaluate the proposals submitted to this competition. NSF is in need of reviewers in three broad categories: a) *expertise in a scientific, engineering or architecture field*, b) *experience in managing large facilities and centers*, or c) *expertise in computer networking*; it is not expected that individuals will have competence in all categories. The merit review panels for this activity will be held during three weeks in October, 2009. Each panelist will be asked to commit up to 3 days to serve on a panel at NSF headquarters in Arlington, VA. Travel expenses, per diem and an honorarium will be provided for your services.
If you have an interest in participating in the merit review process of this important program and have the time to serve on a panel in October, 2009, please go to
http://www.nsf.gov/od/oia/programs/ari/ari_reviewer/
and complete and submit the short form indicating your field of expertise and availability.

EXTENSION NEWS

Return to Front Page

EPA's Data Finder

These web sites link to environmental data that you may find useful. EPA just launched Data Finder (www.epa.gov/datafinder), a single place to find EPA's data sources so people can access and understand environmental information. We encourage people to suggest new content and comment on its functionality. Comments will be displayed in a forum so people can build on each others' ideas and EPA can describe future directions for Data Finder. EPA also will use Data Finder to discover raw data that can be accessed via Data.gov, a federal site that helps people find, download, and use datasets that are generated and held by the Federal Government.

UTIA & UNIVERSITY NEWS

Return to Front Page

NEW LIBRARY HOMEPAGE WENT LIVE AUGUST 7

The UT Libraries unveiled a new homepage on Friday, August 7.

Online visitors will immediately notice a new look, but the changes are more than superficial.

Improved search capabilities are available thanks to a new "discovery and delivery platform" that overlays the Libraries' catalog and other online resources. T

he most obvious change is the addition of the "simple search box" at the top of the homepage. Tabs on the search box offer different ways to search library resources. The new, enhanced searches for books and articles also return more useful search results. A book or article search returns both a list of hits and a list of categories (or "facets") that can be used to quickly refine the search. For assistance in determining the best type of search for your research needs, contact a librarian via our chat or email services (accessible from the homepage), or ask for help at the Research Assistance desk in the Commons.

All the services, resources and information available on the old website are still available.

If you have difficulty finding the resources you need, please ask.

In fact, the Libraries wants your feedback on the new webpage and the upgraded search capabilities. Enhancements will be ongoing, and the Libraries wants to make those changes that best serve its users.

The homepage includes a convenient link for submitting your comments. Look for the new library homepage at the usual URL, http://www.lib.utk.edu . -- Martha E. Rudolph Communications Coordinator University of Tennessee Libraries 865-974-4273 mrudolp2@utk.

Reprinted from
TOMORROW'S PROFESSOR(sm) eMAIL NEWSLETTER
http://cgi.stanford.edu/~dept-ctl/cgi-bin/tomprof/postings.php

The Ten Worst Teaching Mistakes

by Richard M. Felder, North Carolina State University and Rebecca Brent, Education Designs, Inc.

Like most faculty members, we began our academic careers with zero prior instruction on college teaching and quickly made almost every possible blunder. We've also been peer reviewers and mentors to colleagues, and that experience on top of our own early stumbling has given us a good sense of the most common mistakes college teachers make. In this column and one to follow we present our top ten list, in roughly increasing order of badness. Doing some of the things on the list may occasionally be justified, so we're not telling you to avoid all of them at all costs. We are suggesting that you avoid making a habit of any of them.

Mistake #10. When you ask a question in class, immediately call for volunteers.

You know what happens when you do that. Most of the students avoid eye contact, and either you get a response from one of the two or three who always volunteer or you answer your own question. Few students even bother to think about the question, since they know that eventually someone else will provide the answer. We have a suggestion for a better way to handle questioning, but it's the same one we'll have for Mistake #9 so let's hold off on it for a moment.

Mistake #9. Call on students cold.

You stop in mid-lecture and point your finger abruptly: "Joe, what's the next step?" Some students are comfortable under that kind of pressure, but many could have trouble thinking of their own name. If you frequently call on students without giving them time to think ("cold-calling"), the ones who are intimidated by it won't be following your lecture as much as praying that you don't land on them. Even worse, as soon as you call on someone, the others breathe a sigh of relief and stop thinking. A better approach to questioning in class is active learning.[1] Ask the question and give the students a short time to come up with an answer, working either individually or in small groups. Stop them when the time is up and call on a few to report what they came up with. Then, if you haven't gotten the complete response you're looking for, call for volunteers. The students will have time to think about the question, and-unlike what happens when you always jump directly to volunteers (Mistake #10)-most will try to come up with a response because they don't want to look bad if you call on them. With active learning you'll also avoid the intimidation of cold-calling (Mistake #9) and you'll get more and better answers to your questions. Most importantly, real learning will take place in class, something that doesn't happen much in traditional lectures.[2]

Mistake #8. Turn classes into PowerPoint shows.

It has become common for instructors to put their lecture notes into PowerPoint and to spend their class time mainly droning through the slides. Classes like that are generally a waste of time for everyone.[3] If the students don't have paper copies of the slides, there's no way they can keep up. If they have the copies, they can read the slides faster than the instructor can lecture through them, the classes are exercises in boredom, the students have little incentive to show up, and many don't.

Turning classes into extended slide shows is a specific example of:

Mistake #7. Fail to provide variety in instruction.

Nonstop lecturing produces very little learning,[2] but if good instructors never lectured they could not motivate students by occasionally sharing their experience and wisdom. Pure PowerPoint shows are

ineffective, but so are lectures with no visual content-schematics, diagrams, animations, photos, video clips, etc.-for which PowerPoint is ideal. Individual student assignments alone would not teach students the critical skills of teamwork, leadership, and conflict management they will need to succeed as professionals, but team assignments alone would not promote the equally important trait of independent learning. Effective instruction mixes things up: boardwork, multimedia, storytelling, discussion, activities, individual assignments, and group work (being careful to avoid Mistake #6). The more variety you build in, the more effective the class is likely to be.

Mistake #6. Have students work in groups with no individual accountability.

All students and instructors who have ever been involved with group work know the potential downside. One or two students do the work, the others coast along understanding little of what their more responsible teammates did, everyone gets the same grade, resentments and conflicts build, and the students learn nothing about high-performance teamwork and how to achieve it. The way to make group work work is cooperative learning, an exhaustively researched instructional method that effectively promotes development of both cognitive and interpersonal skills. One of the defining features of this method is individual accountability-holding each team member accountable for the entire project and not just the part that he or she may have focused on. References on cooperative learning offer suggestions for achieving individual accountability, including giving individual exams covering the full range of knowledge and skills required to complete the project and assigning individual grades based in part on how well the students met their responsibilities to their team.[4,5]

Mistake #5. Fail to establish relevance.

Students learn best when they clearly perceive the relevance of course content to their interests and career goals. The "trust me" approach to education ("You may have no idea now why you need to know this stuff but trust me, in a few years you'll see how important it is!") doesn't inspire students with a burning desire to learn, and those who do learn tend to be motivated only by grades. To provide better motivation, begin the course by describing how the content relates to important technological and social problems and to whatever you know of the students' experience, interests, and career goals, and do the same thing when you introduce each new topic. (If there are no such connections, why is the course being taught?) Consider applying inductive methods such as guided inquiry and problem-based learning, which use real-world problems to provide context for all course material.[6] You can anticipate some student resistance to those methods, since they force students to take unaccustomed responsibility for their own learning, but there are effective ways to defuse resistance, [7]; and the methods lead to enough additional learning to justify whatever additional effort it may take to implement them.

Mistake #4. Give tests that are too long.

Engineering professors routinely give exams that are too long for most of their students. The exams may include problems that involve a lot of time-consuming mathematical analysis and/or calculations, or problems with unfamiliar twists that may take a long time to figure out, or just too many problems. The few students who work fast enough to finish may make careless mistakes but can still do well thanks to partial credit, while those who never get to some problems or who can't quickly figure out the tricks get failing grades. After several such experiences, many students switch to other curricula, one factor among several that cause engineering enrollments to decrease by 40% or more in the first two years of the curriculum. When concerns are raised about the impact of this attrition on the engineering pipeline, the instructors argue that the dropouts are all incompetent or lazy and unqualified to be engineers. The instructors are wrong. Studies that have attempted to correlate grades of graduates with subsequent career success (as measured by promotions, salary increases, and employer evaluations) have found that the correlations are negligible [8]; students who drop out of engineering have the same academic profile as those who stay [9]; and no one has ever demonstrated that students who can solve a

quantitative problem in 20 minutes will do any better as engineers than students who need 35 minutes. In fact, students who are careful and methodical but slow may be better engineers than students who are quick but careless. Consider which type you would rather have designing the bridges you drive across or the planes you fly in. If you want to evaluate your students' potential to be successful professionals, test their mastery of the knowledge and skills you are teaching, not their problem-solving speed. After you make up a test and think it's perfect, take it and time yourself, and make sure you give the students at least three times longer to take it than you needed (since you made it up, you don't have to stop and think about it)-and if a test is particularly challenging or involves a lot of derivations or calculations, the ratio should be four or five to one for the test to be fair.[10]

Mistake #3: Get stuck in a rut

Some instructors teach a course two or three times, feel satisfied with their lecture notes and PowerPoint slides and assignments, and don't change a thing for the rest of their careers except maybe to update a couple of references. Such courses often become mechanical for the instructors, boring for the students, and after a while, hopelessly antiquated. Things are always happening that provide incentives and opportunities for improving courses. New developments in course subject areas are presented in research journals; changes in the global economy call on programs to equip their graduates with new skills; improved teaching techniques are described in conference presentations and papers; and new instructional resources are made available in digital libraries such as SMETE (www.smete.org), Merlot (www.merlot.org/merlot/index.htm), and the MIT Open Courseware site (http://ocw.mit.edu). This is not to say that you have to make major revisions in your course every time you give it-you probably don't have time to do that, and there's no reason to. Rather, just keep your eyes open for possible improvements you might make in the time available to you. Go to some education sessions at professional conferences; read articles in educational journals in your discipline; visit one or two of those digital libraries to see what tutorials, demonstrations, and simulations they've got for your course; and commit to making one or two changes in the course whenever you teach it. If you do that, the course won't get stale, and neither will you.

Mistake #2. Teach without clear learning objectives

The traditional approach to teaching is to design lectures and assignments that cover topics listed in the syllabus, give exams on those topics, and move on. The first time most instructors think seriously about what they want students to do with the course material is when they write the exams, by which time it may be too late to provide sufficient practice in the skills required to solve the exam problems. It is pointless-and arguably unethical-to test students on skills you haven't really taught. A key to making courses coherent and tests fair is to write learning objectives-explicit statements of what students should be able to do if they have learned what the instructor wants them to learn-and to use the objectives as the basis for designing lessons, assignments, and exams.[11] The objectives should all specify observable actions (e.g., define, explain, calculate, solve, model, critique, and design), avoiding vague and unobservable terms like know, learn, understand, and appreciate. Besides using the objectives to design your instruction, consider sharing them with the students as study guides for exams. The clearer you are about your expectations (especially high-level ones that involve deep analysis and conceptual understanding, critical thinking, and creative thinking), the more likely the students will be to meet them, and nothing clarifies expectations like good learning objectives.

Mistake #1. Disrespect students.

How much students learn in a course depends to a great extent on the instructor's attitude. Two different instructors could teach the same material to the same group of students using the same methods, give identical exams, and get dramatically different results. Under one teacher, the students might get good grades and give high ratings to the course and instructor; under the other teacher, the grades could be low, the ratings could be abysmal, and if the course is a gateway to the curriculum,

many of the students might not be there next semester. The difference between the students' performance in the two classes could easily stem from the instructors' attitudes. If Instructor A conveys respect for the students and a sense that he/she cares about their learning and Instructor B appears indifferent and/or disrespectful, the differences in exam grades and ratings should come as no surprise. Even if you genuinely respect and care about your students, you can unintentionally give them the opposite sense. Here are several ways to do it: (1) Make sarcastic remarks in class about their skills, intelligence, and work ethics; (2) disparage their questions or their responses to your questions; (3) give the impression that you are in front of them because it's your job, not because you like the subject and enjoy teaching it; (4) frequently come to class unprepared, run overtime, and cancel classes; (5) don't show up for office hours, or show up but act annoyed when students come in with questions. If you've slipped into any of those practices, try to drop them. If you give students a sense that you don't respect them, the class will probably be a bad experience for everyone no matter what else you do, while if you clearly convey respect and caring, it will cover a multitude of pedagogical sins you might commit.

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http://www4.ncsu.edu/unity/lockers/users/f/felder/public/